

IN THE CLAIMS

1 1. (Amended) A catalytic converter and resonator combination
2 device for use in an exhaust system of an internal combustion
3 engine, whereby said device being disposed between an exhaust
4 manifold and an exhaust tail pipe or an exhaust muffler, said
5 device comprising:

6 a canister for installing in the exhaust system of [an] the
7 internal combustion engine, [with] said canister having a
8 longitudinal axis, and including an inlet end, a forward portion
9 adjacent said inlet end, a rearward portion adjacent said forward
10 portion, an outlet end adjacent said rearward portion, a forward
11 inner diameter, and a rearward inner diameter;

12 at least one catalytic converter element installed within said
13 forward portion of said canister, with said catalytic converter
14 element having an outer diameter and including a substrate having
15 a plurality of longitudinal passages therethrough, with each of
16 said passages being defined by a plurality of substrate walls, said
17 passages being parallel with the longitudinal axis of said
18 canister;

19 a resonator element installed within said rearward portion of
20 said canister, with said resonator element having a hollow core, a
21 forward end, a rearward end, an outer diameter, and a plurality of
22 sound attenuating perforations formed radially therethrough;

23 said outer diameter of said resonator element being smaller
24 than said rearward inner diameter of said canister, and defining a
25 sound attenuating plenum therebetween; and

26 said inlet end of said canister, said [plurality of passages
27 of said] catalytic converter element, said hollow core of said
28 resonator element, and said outlet end of said canister all being
29 [axially] aligned along said longitudinal axis with one another for
30 providing straight through[, low restriction, free] flow of engine
31 exhaust therethrough.

1 8. (Amended) The catalytic converter and resonator
2 combination according to claim 1, wherein said substrate walls of
3 said at least one catalytic converter element [are thin, for
4 providing a large] provide a surface area to substrate volume ratio
5 for accelerating heat transfer to said substrate walls, for
6 correspondingly accelerating the catalytic reaction within said
7 catalytic converter element.

1 9. (Amended) The catalytic converter and resonator
2 combination according to claim 1, wherein said substrate of said at
3 least one catalytic converter element is formed of material
4 selected from the group consisting of ceramics and [Dow-Corning XT]
5 cordierite ceramics.

1 11. (Amended) A catalytic converter and resonator combination
2 device for use in an exhaust system of an internal combustion
3 engine, whereby said device being disposed between an exhaust
4 manifold and an exhaust tail pipe or an exhaust muffler, said
5 device comprising:

6 a canister for installing in the exhaust system of [an] the
7 internal combustion engine, [with] said canister having a
8 longitudinal axis, and including a pair of inlets, a forward
9 portion adjacent said inlets, a rearward portion adjacent said
10 forward portion, a pair of outlets adjacent said rearward portion,
11 a forward inner circumference, and a rearward inner [thickness]
12 diameter;

13 at least one catalytic converter element installed within said
14 forward portion of said canister, with said catalytic converter
15 element having an outer circumference and including a substrate
16 having a plurality of longitudinal passages therethrough, with each
17 of said passages being defined by a plurality of substrate walls,
18 said passages being parallel with the longitudinal axis of said
19 canister;

20 a first and a second resonator element installed within said
21 rearward portion of said canister, with each said resonator element
22 having a hollow core, a forward end, a rearward end, an outer
23 [width] diameter, and a plurality of sound attenuating perforations

24 therethrough, with each said resonator element being disposed
25 alongside one another;

26 said outer [width] diameter of each said resonator element
27 being smaller than said rearward inner [thickness] diameter of said
28 canister, and defining a sound attenuating plenum therebetween; and

29 said inlets of said canister, said [plurality of passages of
30 said] catalytic converter element, said hollow core of each said
31 resonator element, and said outlets of said canister all being
32 axially parallel to one another and said longitudinal axis for
33 providing straight through[, low restriction, free] flow of engine
34 exhaust therethrough.

1 12. (Amended) The catalytic converter and resonator
2 combination according to claim 11, wherein [at least said forward
3 portion and said rearward portion of] said canister comprises a
4 monolithic tubular shell.

1 18. (Amended) The catalytic converter and resonator
2 combination according to claim 11, wherein said substrate walls of
3 said at least one catalytic converter element [are thin, for
4 providing a large] provide a surface area to substrate volume ratio
5 for accelerating heat transfer to said substrate walls, for
6 correspondingly accelerating the catalytic reaction within said
7 catalytic converter element.

1 19. (Amended) The catalytic converter and resonator
2 combination according to claim 11, wherein said substrate of said
3 at least one catalytic converter element is formed of material
4 selected from the group consisting of ceramics and [Dow-Corning XT]
5 cordierite ceramics.

1 21. (Amended) A catalytic converter and resonator combination
2 device for use in an exhaust system of an internal combustion
3 engine, whereby said device being disposed between an exhaust
4 manifold and an exhaust tail pipe or an exhaust muffler, said
5 device comprising:

6 a canister for installing in the exhaust system of [an] the
7 internal combustion engine, [with] said canister having a
8 longitudinal axis, and including at least one inlet, a forward
9 portion adjacent said at least one inlet, a rearward portion
10 adjacent said forward portion, at least one outlet adjacent said
11 rearward portion, a forward inner circumference, and a rearward
12 inner [thickness] diameter;

13 at least one catalytic converter element installed within said
14 forward portion of said canister, with said catalytic converter
15 element having an outer circumference and including a substrate
16 having a plurality of longitudinal passages therethrough, with each
17 of said passages being defined by a plurality of substrate walls.

18 said passages being parallel with the longitudinal axis of said
19 canister;

20 at least one resonator element installed within said rearward
21 portion of said canister, with said at least one resonator element
22 having a hollow core, a forward portion, a rearward portion, an
23 outer diameter, and a plurality of sound attenuating perforations
24 formed radially through said forward portion thereof, with said
25 rearward portion thereof being devoid of perforations therethrough;

26 said outer diameter of said at least one resonator element
27 being smaller than said rearward inner [thickness] diameter of said
28 canister, and defining a sound attenuating plenum therebetween;

29 said at least one inlet of said canister, said [plurality of
30 passages of said] at least one catalytic converter element, said
31 hollow core of said at least one resonator element, and said at
32 least one outlet end of said canister all being [axially] aligned
33 along said longitudinal axis with one another for providing
34 straight through[, low restriction, free] flow of engine exhaust
35 therethrough;

36 said rearward portion of said at least one resonator element
37 extending outwardly beyond said at least one outlet of said
38 canister; and

39 said at least one resonator element being selectively axially
40 positionable within said canister for selectively attenuating

41 exhaust sound frequencies in a predetermined sound frequency range
42 [as desired].

Claim 24, line 2, delete "end" and insert --portion--.

1 28. (Amended) The catalytic converter and resonator
2 combination according to claim 21, wherein said substrate walls of
3 said at least one catalytic converter element [are thin, for
4 providing a large] provide a surface area to substrate volume ratio
5 for accelerating heat transfer to said substrate walls, for
6 correspondingly accelerating the catalytic reaction within said
7 catalytic converter element.

1 29. (Amended) The catalytic converter and resonator
2 combination according to claim 21, wherein said substrate of said
3 at least one catalytic converter element is formed of material
4 selected from the group consisting of ceramics and [Dow-Corning XT]
5 cordierite ceramics.

Claim 30, line 7, delete "end" and insert --portion--.